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EXAMINER	
TRINH, THANH TRUC	

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1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/569,203	TAKEYAMA, YOSHIFUMI	
	Examiner	Art Unit	
	THANH-TRUC TRINH	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) *6-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/1/06, 5/1/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-5, drawn to a photovoltaic element, classified in class 136, subclass 243.

II. Claims 6-10, drawn to a method of producing a photovoltaic element, classified in class 438, subclass 48.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by different method such as laser scribing to remove a portion of the transparent electrode layer.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

During a telephone conversation with applicant's representative, Damond Vadnais, on 3/19/2009, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-5. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6-10 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "a portion of the transparent electrode layer being continuously removed at a peripheral part of the metal substrate" in lines 3-5. The meets and bounds of the limitation cannot be determined. It is unclear what structure would be formed as the result of a "continuously" removing a portion of the transparent electrode. In addition, a single claim which claims both a product and the method steps of making is held to be ambiguous and indefinite.

Claim 1 recites the limitations "the rear surface of the metal substrate" in lines 13-14, "the rear of the island-shaped transparent-electrode-layer-removed portion" in line 14-15. There is insufficient antecedent basis for these limitations in the claim.

Claim 1 recites the limitation "a rear surface bus-bar electrode electrically connected to the metal substrate is disposed on the rear surface side of the metal substrate at the rear of the island-shaped-transparent-electrode-layer-removed-portion, and the rear surface side bus bar electrode is connect to the metal substrate at a portion corresponding to the island-shaped-transparent electrode layer removed portion" in lines 11-19 which renders the claim indefinite as it is unclear to what is described.

Claims 2-5 are rejected on the same ground.

Claim 5 recites the limitation "the island-shaped transparent-electrode-layer-removed-portion just over the portion where the rear surface side bus-bar electrode and

the metal substrate are connected to each other is arranged between the current-collecting electrodes" in lines 13-17. It is unclear what is being described in this limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtsuka et al. (US Patent 5651837) in view of Fujisaki et al. (US Patent 592048) and

Regarding claim 1, as seen in Figures 12-16, Ohtsuka et al. teaches a photovoltaic element (e.g. 1501, 1502 or 1503 as seen in Figure 15) having at least a photovoltaic layer (e.g. semiconductor layer 1203 as seen in Figure 12) and a transparent electrode layer (e.g. 1204 as seen in Figure 12) deposited on a metal substrate (e.g. 1201, see col. 9 lines 7-11); a portion of the transparent electrode layer

being continuously removed at a peripheral part of the metal substrate (e.g. 1301 as seen in Figures 13-14); and a rear surface side bus–bar electrode (e.g. 1602 as seen in Figure 16) electrically connected to the metal substrate (e.g. via copper foil 1505 as in Figure 15, or 1305 as in Figure 13) is disposed on the rear surface side of the metal substrate at the rear of the front contact portion (e.g. 1304), and the rear surface side bus-bar electrode (e.g. 1602) is connected to the metal substrate at a portion corresponding to the front contact portion (see Figures 15-16, example 1). Ohtsuka et al. also teaches using a tin-coated copper (e.g. 1303 as seen in Figures 13-14) as a front collecting electrode that contacts with the front collecting grid electrodes (e.g. 1302) crossing, wherein a front colleting electrode or the front collecting grid electrode is provided on the transparent electrode layer in a power-generating region surrounded by the removed portion of the transparent electrode layer (see figures 12-14)

The difference between Ohtsuka et al. and the instant claims is the requirement of an island-shape transparent-electrode-layer removed portion provided in the transparent electrode layer.

Fujisaki et al. teaches an island-shaped transparent-electrode layer removed portion provided in the transparent electrode layer (e.g. contact point 14106a as seen in Figures 14-15 with the transparent electrode being the light transmissive film 15203) to form contact portion (e.g. 14106).

It would have been obvious to one skilled in the art at the time the invention was made to modify the photovoltaic element of Ohtsuka et al. by having an island-shaped transparent electrode layer removed portion provided in the transparent electrode layer

as taught by Fujisaki et al, because Fujisaki et al. such portion serves as a contact point for the collecting electrode (See col. 36 lines 47-55). In such combination, the front contact point of Ohtsuka et al. would have been obvious in the island-shaped transparent electrode layer removed portion provided in the transparent electrode and in the front of the semiconductor layer. In addition the limitation "a portion of the transparent electrode layer being continuously removed at a peripheral part of the metal substrate" appears to describe how to form the portion which is a product-by-process limitation. The determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. MPEP 2113.

Regarding claim 2, in the combination of Ohtsuka et al. in view of Fujisaki et al., the island-shaped transparent-electrode-layer-removed-portion is separate from the removed portion of the transparent electrode layer that surrounds the power-generating region.

Regarding claim 3, as seen in Figure 13, Ohtsuka et al. discloses the front contact point (e.g. 1304) attaching to the wire (e.g. 1303), and the wire crosses the removed portion of the transparent electrode layer (e.g. ITO removed portion 1301). Therefore, in the combination of Ohtsuka et al. in view of Fujisaki et al., the island-shaped transparent-electrode-layer-removed-portion is obviously integrated with the removed portion of the transparent electrode layer that surrounds the power-generating region.

Regarding claim 4, as seen in Figure 14 or 17, Fujisaki et al. discloses a lead out terminal (e.g. 14104 in Figure 14, 17404 in Figure 17) crossing the collecting grid

electrode (e.g. 14103 in Figure 14, 17402 in Figure 17) in a similar fashion as the fron collecting electrode 1302 in Ohtsuka et al., wherein the lead out terminal is disposed through an insulating member (e.g. 14105). Therefore, in the combination of Ohtsuka et al. in view of Fujisaki et al., it would have been obvious that the current-collecting electrode (e.g. wire 1303 in Ohtsuka et al. or lead out terminal 14104) to be disposed through an insulating member (e.g. 14105) as taught by Fujisaki et al. on the island-shaped transparent-electrode-layer-removed-portion just over the portion, because Fujisaki et al. teaches such insulating layer would electrically insulate the terminal members from the photovoltaic element (See col. 35 lines 1-10 of Fujisaki et al. Ohtsuka et al. teaches the rear surface side bus-bar electrode and the metal substrate are connected to each other. (See Figures 16).

Regarding claim 5, as seen in Figures 12-14, Ohtsuka teaches a plurality of current-collecting electrodes (e.g. or collecting grid electrode 1302) are provided on the transparent electrode layer (e.g. 1204), and the wire (e.g. 1303) with contact portions (e.g. 1304) just over the portion where the rear surface side bus-bar electrode (e.g. 1602) and the metal substrate (e.g. 1201, see col. see col. 9 lines 7-11) are connected to each other is arranged between the current collecting electrodes (See Figures 15-16). Fujisaki et al. teaches the contact points can be formed by island-shaped transparent-electrode-layer removed portions. Therefore, in the combination of Ohtsuka et al. in view of Fujisaki et al, it would have been obvious that the island-shaped transparent-electrode-layer-removed-portion is just over the portion where the rear surface side bus bar electrode (e.g. 1602) and the metal substrate (e.g. 1201) are

connected to each other (e.g. via the copper foil 1505 as seen in Figures 15-16) and arranged between the current –collecting electrodes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THANH-TRUC TRINH whose telephone number is (571)272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

TT
6/4/2009